

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



20 APR 2005



(43) International Publication Date  
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number  
**WO 2004/038828 A2**

- (51) International Patent Classification<sup>7</sup>: **H01M**
- (21) International Application Number: PCT/US2003/033811
- (22) International Filing Date: 23 October 2003 (23.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/420,689 23 October 2002 (23.10.2002) US
- (71) Applicant (for all designated States except US): IN-  
VENTQJAYA SDN. BHD. [MY/MY]; Level 7, Setia 1,  
15, Lorong Dungun, Damansara Heights, 50490, Kuala  
Lumpur (MY).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MORRIS, William,  
F. [US/US]; 2108 Central Park Avenue, Yonkers, NY 10710  
(US). SOLORZANO, Julio, G. [US/US]; 2409 Mica Mine  
Lane, Wake Forest, NC 27587 (US).
- (74) Agent: CRISPINO, Ralph; Reveo, Inc., Elmsford, NY  
10523 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN,  
YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— without international search report and to be republished  
upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: OXIDANT FLOW SYSTEM FOR SUBMERGED METAL AIR ELECTROCHEMICAL CELL

(57) Abstract: A system is provided for efficiently and conveniently circulating oxidant (e.g., air) across an air cathode of a submerged or partially submerged electrochemical cell. The electrochemical cell includes an air inlet in gaseous communication with a surface of the air cathode. A cathode frame is provided having designated passageways for causing air to flow in a multi directional path across the surface of the air cathode. The cathode frame provides access to an air outlet at a top end of the air cathode. Airflow has a gradient from the inlet to the outlet due to the increased temperature of the air imparted by heat of electrochemical reaction.

WO 2004/038828 A2